

REMARKS

Claims 77 to 106, 108 to 138 and newly added claim 139 are pending in this application. A number of claims have been amended to improve readability. For example, claims reciting a “feature comprising noble metal” by its very words encompasses alloys comprising noble metals and oxides comprising noble metals, so that extraneous claim language was deleted. Reconsideration and allowance are respectfully requested.

The claims stood withdrawn as being directed to an invention originally elected. The claims have been amended to overcome the Examiner’s objections by making all claims refer to a combination (of a substrate and a composition) rather than to a process. As claim 138 recited a process where two compositions were used sequentially, claim 138 was amended to recite only the first composition in the combination, and new claim 139 was added to recite the second composition in the combination. Claim 107 was canceled. No new matter has been added.

The claims have been rejected in previous Office Actions under varying paragraphs of 37 CFR 102/103 as being anticipated and unpatentable over several references uncovered during the Examiner’s search, and including references previously cited. It is believed that the foregoing amendments and following remarks will place this application in condition for allowance.

Applicants have amended all claims to recite that the claimed invention is a composition in contact with a substrate having a feature comprising a noble metal. Previously counsel had attempted to have the Examiner consider the substrate as part of the composition because that was the intended use, and the Examiner correctly maintained that language in a claim preamble regarding an intended use does not have patentable weight. However, statements of intended use or asserted benefits in the preamble may, in rare instances, limit apparatus claims, but only if the applicant clearly and unmistakably relied upon those uses or benefits to distinguish prior art. *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002). Further, a claim preamble may be a limitation on claim scope and infringement when the main claim body acts on or refers to some feature found only in the preamble, and the preamble must be a claim limitation when the main body of the claim refers back to the preamble for a feature required by the main body of the claim. *Eaton Corp. v. Rockwell International Corp.*, 66 USPQ2d 1271 (2003) (emphasis added). Applicants had believed that the phrase “in a combined amount sufficient to render the substrate surface substantially planar upon chemical-mechanical polishing thereof” in the main body of independent claim 77 referred

back to the preamble for a feature required by the main body of the claim (the words “substrate surface”). However, the Examiner was within his discretion in continuing to reject the claims.

In an effort to promote the resolution of this case, Applicants have amended the claims to be composition claims encompassing the combination of the composition which is in contact with a substrate having a noble metal feature thereon, and to affirmatively recite the substrate in the main body of the claim.

Applicants submit that the claims as amended are patentable over the cited references, all of which relate to polishing traditional metals such as aluminum, tungsten, copper, and the like. In particular, the Examiner had previously rejected a number of the compositions over Fang (USP 6,461,227). This patent describes compositions useful for polishing memory hard disks (e.g., nickel-phosphorous, as stated in column 2, lines 10-16), and does not mention noble metals as recited in all pending claims, much less specific noble metals such as iridium, iridium oxide (IrO_2), or platinum (Pt). The Examiner had previously rejected a number of the compositions over Shemo 774 (USP 6,328,774). This patent describes compositions useful for polishing memory hard disks (e.g., nickel-phosphorous, Ni-Fe, aluminum, boron carbide, and the like as stated in column 1, lines 10-16), and does not mention noble metals. Additionally, with respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Shemo 774 requires a second oxide, a peroxydisulfate compound. The Examiner had previously rejected a number of the compositions over Shemo 831 (USP 6,332,831). This patent describes compositions useful for polishing memory hard disks (e.g., nickel-phosphorous, Ni-Fe, aluminum, boron carbide, and the like as stated in column 1, lines 10-15), and does not mention noble metals as recited by all pending claims. The Examiner had previously rejected a number of the compositions over Dirksen (published application 2002/0076932). This patent describes compositions useful for polishing substrates, and requires a metal oxide abrasive having a surface hydroxyl density of no greater than 3 hydroxyl groups per nm^2 . This patent mentions the compositions described therein may be useful for noble metals in paragraph 8. However, with respect to claims 77 to 93, Dirksen does not teach polishing the noble metal at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Dirksen does not teach a composition having the required selectivity (nor do any of the Examples utilize alumina or periodic acid). With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Dirksen

attains his hydroxyl group density by adding a reducing agent (e.g., organotitanium coupling agent, a silane coupling agent, an aluminum coupling agent...) as described in paragraph 13, which clearly distinguishes this Dirksen from the pending claims.

The Examiner had previously rejected a number of the compositions over Brusic (USP 6,527,622). This patent describes compositions useful for polishing noble metals, and requires any of: polishing additives selected from the group consisting of diketones, diketonates, heterocyclic nitrogen-containing compounds, heterocyclic oxygen-containing compounds, heterocyclic phosphorus-containing compounds, urea compounds, nitrogen-containing compounds that can be zwitterionic compounds, salts thereof, and combinations thereof; or a metal compound with two or more oxidation states used in conjunction with a peroxy-type oxidizer, or .alpha.-alumina and fumed alumina, wherein the weight ratio of .alpha.-alumina to fumed alumina is about 0.6:1 to about 9:1. However, with respect to claims 77 to 93, Brusic does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. In Example 1, even at an extremely high 500 RPM revolution rate, the platinum polishing rate varied between 1 and 60 angstroms per minute with a persulfate and between 5 and 377 angstroms per minute with hydrogen peroxide. No example or embodiment was described having periodic acid and attaining the recited polishing rate. For ruthenium, none of the polishing compounds with persulfate reached a polishing rate of 300 angstroms per minute, though many did when ruthenium was polished with hydrogen peroxide. But none of the Examples utilize periodic acid. Brusic does not teach or suggest, furthermore, that equivalent results would, much less must, be achieved with a composition comprising periodic acid as would be achieved with certain combinations of hydrogen peroxide. With respect to claims 94 to 111, Dirksen does not teach a composition having the required selectivity. Not only do none of the Examples utilize periodic acid, but none report any polishing rates for a dielectric material. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Brusic requires any of a number of compounds which are not allowed for in the "consisting essentially of" claims.

The Examiner had previously rejected a number of the compositions over Moeggenborg (published application 2003/0060135). This application describes compositions useful for polishing noble metals, and requires a rare earth salt oxidizer used in conjunction with a peroxy-type oxidizer. However, with respect to claims 77 to 93, Moeggenborg does not teach polishing

the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. No example or embodiment was described having periodic acid and attaining the recited polishing rate. With respect to claims 94 to 111, Moeggenborg does not teach a composition having the required selectivity. Not only do none of the Examples utilize periodic acid, but none report any polishing rates for a dielectric material. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Brusic requires a rare earth salt oxidizer which not allowed for in the “consisting essentially of” claims.

The Examiner rejected a number of the compositions over Streinz (USP 5,993,686). This patent describes compositions useful for polishing tungsten and titanium nitride, and describe achieving excellent selectivity between the titanium nitride, tungsten, and a dielectric material – but not with respect to any noble metals. Additionally, with respect to claims 77 to 93, Streinz does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Streinz does not teach a composition having the required selectivity between a noble metal and the dielectric. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Streinz requires a fluoride-containing additive which not allowed for in the “consisting essentially of” claims.

The Examiner rejected a number of the compositions over Kaufman (USP 6,063,306). This patent describes compositions useful for polishing copper and tantalum nitride, but not with any noble metals. Additionally, with respect to claims 77 to 93, Kaufman does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Kaufman does not teach a composition having the required selectivity between a noble metal and the dielectric. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Kaufman (at column 3, lines 42-45) requires both a complexing agent and an organic amino compound. While the complexing agent might be an organic acid such as described in certain embodiments of the suspension agent, the organic amino compound is not allowed for in the “consisting essentially of” claims.

The Examiner rejected a number of the compositions over Tredinnick (published application 2002/0125460). This application describes compositions useful for polishing tungsten and titanium nitride, but not with any noble metals. Additionally, with respect to claims

77 to 93, Tredinnick does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Tredinnick does not teach a composition having the required selectivity between a noble metal and the dielectric.

In conclusion, none of these references, alone or together, teach the limitations of the claims as amended. Applicants therefore respectfully request reconsideration and allowance of all claims.

The undersigned Applicants' Representative had an interview with the Examiner on this case on July 7, 2005. In this interview, Applicants proposed amending claims to recite the slurry composition in contact with the substrate comprising a noble metal. Applicants' Representative explained why the combination is novel and non-obvious over the cited art, most of which described compositions in contact with substrates comprising metals such as aluminum, copper, tungsten, and the like. Applicant's Representative argued that while the clause "in an amount sufficient to planarize said substrate" was sufficient reference thereto to have the preamble be incorporated into the claims, but also acknowledged this argument was moot since the substrate was placed into the main body of the claim, said substrate forming part of the claimed combination.

The Examiner is respectfully asked to address his response to the undersigned, and, should there be any matters which the Examiner believes can be handled by either a telephonic or by an in-person interview, the Examiner is requested to call the undersigned at 202 739-5557.

No fee is believed necessary relating to this response – however, if any additional fees are deemed necessary for any reason, the Office is authorized to charge them to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310.

Respectfully submitted,

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